

NORTH DAKOTA *ELEODES* (COLEOPTERA: TENEBRIONIDAE)¹

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ABSTRACT: Seven species of *Eleodes* (Coleoptera: Tenebrionidae) are recorded for North Dakota: *E. extricatus*, *E. hispilabris*, *E. nigrinus*, *E. obsoletus*, *E. opacus*, *E. suturalis* and *E. tricostatus*. Information on geographical and seasonal distribution is presented, along with a key to the species.

Eleodes is the largest genus of Tenebrionidae in North America. Its species are decidedly western in distribution, being most diverse in southwestern desert areas of the United States and in arid parts of Mexico. Larvae, called false wireworms, cause considerable damage to wheat and other crops throughout the Great Plains. Although none have been previously reported from North Dakota³, members of this genus form a conspicuous and economically important part of the ground-inhabiting beetle fauna of the state. The purpose of this paper is to present a list of the species occurring in North Dakota, annotated with information on seasonal and geographical distribution, and a key with which specimens may be identified.

North Dakota is divided into three principal physiographic areas: Missouri Plateau, Drift Prairie and Red River Valley (Fig. 1). Distribution of *Eleodes* spp. is concentrated in the Missouri Plateau, which approximately covers that portion of the state having a semiarid climate (Omodt, *et al.* 1968). Diversity and population densities peak in the unglaciated portion of the Plateau, and, in particular, in the Badlands, where six of the seven species herein recorded occur. Most records from the Drift Prairie are from sandy areas and this is also true for records from the Red River Valley. Both

³Papp (1961) listed *E. tricostatus* and *E. suturalis* from "Dak." These records were apparently extracted from Blaisdell's (1909) work on the genus in which he presented records for these species from localities actually in South Dakota. Blaisdell (1909) also reported *E. extricatus* and *E. nigrinus* from Dakota, but gave no specific localities. The latter was probably extracted from Horn (1870) who recorded "Dacota" as part of the distribution of *E. nigrinus*. The additional distribution data presented by Tanner (1961) also contained no references to North Dakota. Wade (1921) mentioned North Dakota in his work on injurious Tenebrionidae, but did not refer to any particular species. In their paper on the biology of *E. suturalis*, Wade and St. George (1923) indicated that "the Dakotas" are within the area where false wireworms damage wheat crops, but presented distribution records for *E. suturalis* only from South Dakota and other states to the south and west.

¹Received May 16, 1987. Accepted August 11, 1987.

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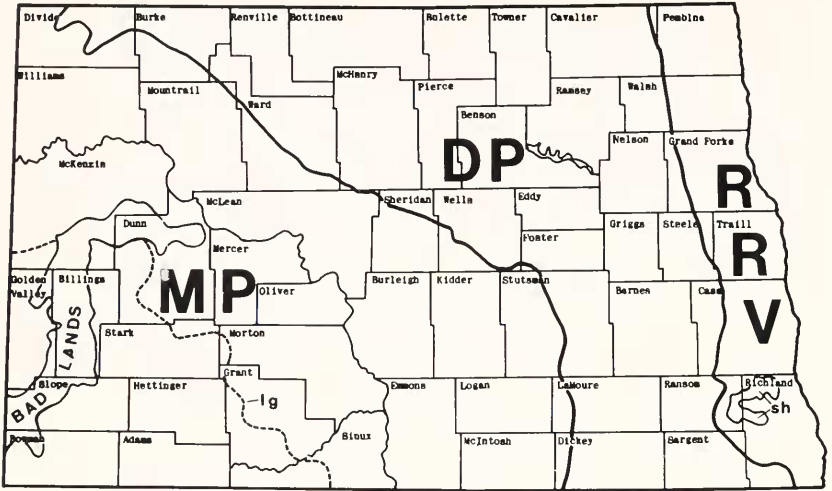


Fig. 1. Major physiographic features of North Dakota. DP - Drift Prairie; MP - Missouri Plateau; RRV - Red River Valley; lg - limit of glaciation; sh - sand hills region of Sheyenne River Delta.

of these areas are dominated by heavier soils (Omodt, *et al.* 1968) that generally do not support large populations of *Eleodes*.

The following records are based primarily on specimens contained in the insect collections at North Dakota State University and the University of North Dakota, and in my collection. Additional records were provided by E.U. Balsbaugh, Jr. (NDSU) from a study being conducted by M.J. Weiss, and by J.T. Doyen (University of California, Berkeley). These are indicated by the initials EUB and JTD, respectively, in the text.

Distribution Records

Eleodes extricatus (Say).

Forty-eight records from the following localities: *Benson Co.*, Pleasant Lake (JTD)., *Billings Co.*, T. Roosevelt Nat. Mem. Park; 6 mi. S. Medora (JTD). *Bowman Co.*, no locality. *Dunn Co.*, Killdeer Mts. *Golden Valley Co.*, Beach; Sentinel Butte. *Grant Co.*, Heart Butte Dam. *Mercer Co.*, T144N-R85W-Sec. 9. *McKenzie Co.*, T146N-R98W-Sec. 16. *Morton Co.*, 3.5 mi. S. St. Anthony. *Ransom Co.*, no locality. *Slope Co.*, Burning Coal Vein; 9 mi. NW Amidon (JTD); Chalky Buttes; T136N-R102W-Sec. 24.

Collection dates: 30 April - 21 September.

Specimens examined: 546.

This species is locally abundant in southwestern North Dakota, and is essentially restricted to that part of the state south and west of the Missouri River.

***Eleodes hispilabris* (Say).**

Eighty-two records from the following localities: *Adams Co.*, Hettinger. *Barnes Co.*, no locality. *Billings Co.*, T. Roosevelt Nat. Mem. Park; 1 mi. N Bear Creek. *Burleigh Co.*, no locality. *Cass Co.*, Fargo; numerous specimens with no specific locality. *Dickey Co.*, 1 mi. W and 4 mi. S. Oakes. *Divide Co.*, no locality. *Dunn Co.*, T146N-R97W-Sec. 25; T144N-R94W-Sec. 7; 3 mi. NW Killdeer (JTD); Killdeer Mts. *Golden Valley Co.*, Sentinel Butte. *Grand Forks Co.*, Grand Forks; Inkster; T151N-R52W-Sec. 16. *Grant Co.*, Heart Butte Dam. *Hettinger Co.*, New England. *McHenry Co.*, no locality. *McKenzie Co.*, T. Roosevelt Nat. Mem. Park; Cannonball Crk.; T146N-R98W-Sec. 16. *McLean Co.*, Missouri Riv. S of Garrison. *Morton Co.*, Mandan; 9.5 mi. E Flasher. *Nelson Co.*, no locality. *Ramsey Co.*, Webster. *Sargent Co.*, no locality. *Slope Co.*, Burning Coal Vein; Chalky Buttes; 3 mi. NE Marmarth (JTD); T136N-R102W-Sec. 10 (JTD); numerous specimens with no specific locality. *Stark Co.*, no locality. Ward Co., North Central Exp. Sta (EUB) *Williams Co.*, Williston; Williston Exp. Sta. (EUB).
Collection dates: 24 April - 18 October.
Specimens examined: 146.

Eleodes hispilabris is the largest of the common North Dakota species. It is somewhat more widely distributed than *E. extricata* in the state; and, like that species, is primarily confined to the west. Only 17 specimens were seen from localities east of the Missouri River. These beetles are never abundant; 56 of the above records are based on single specimens.

***Eleodes nigrinus* (LeConte).**

Record: Badlands, N.D. (no county given). 13 May 1940.
Specimens examined: 1

Considering the great amount of collecting that has occurred in the North Dakota Badlands, it seems unusual that more specimens of this species have not been found, if, in fact, it occurs in the state. The general habitus of this species is such that it is not easily confused with others in the area, so I doubt that specimens are being overlooked. Actually the larger size of *E. nigrinus* (compared to the abundant *E. extricata*, *E. obsoleta* and *E. opaca*) would seem to make it more of a target for general collectors.

***Eleodes obsoletus* (Say).**

Forty-eight records from the following localities: *Adams Co.*, Hettinger. *Billings Co.*, T. Roosevelt Nat. Mem. Park. *Bowman Co.*, Bowman-Haley Dam. *Dunn Co.*, Killdeer Mts; 3 mi. NW Killdeer (JTD); T146N-R97W-Sec. 25. *Golden Valley Co.*, no locality. *Grant Co.*,

Heart Butte Dam: 3.5 mi. S Elgin; 20 mi. NE Carson; 18 mi. NE Carson. *Hettinger Co.*, T134N-R97W-Sec. 9. *McKenzie Co.*, T146N-R98W-Sec. 16. *McLean Co.*, Missouri Riv. S of Garrison. *Mercer Co.*, Beulah; T144N-R85W-Sec. 9. *Ransom Co.*, (?) no locality. *Slope Co.*, Amidon; Burning Coal Vein; Chalky Buttes; T136-N-R102W-Sec. 24; T134N-R101W-Sec. 15; Mineral Springs. *Stutsman Co.*, Chase Lake.
Collection dates: 18 April - 26 September.
Specimens examined: 379.

Eleodes obsoletus is essentially restricted to the area south and west of the Missouri River, although there is a population in the vicinity of Chase Lake in Stutsman County, a locality also within the Missouri Plateau. The only record outside the Plateau is for one specimen from Ransom County. This specimen bears the same label as the specimen of *E. extricatus* from the same county. No specific locality and no collector is given. The date, 8 June 1962, is the same on both. During extensive collecting in Ransom County, I was unable to find specimens of either species. I am, therefore, inclined to regard both specimens as mislabeled.

Like *E. extricatus*, *E. obsoletus* is locally abundant. In particular, large numbers were collected on hillsides near Heart Butte Dam in Grant County and Burning Coal Vein in Slope County.

Eleodes opacus (Say)

Ninety records from the following localities: *Adams Co.*, no locality. *Billings Co.*, T. Roosevelt Nat. Mem. Park. *Bowman Co.*, Bowman-Haley Dam. *Burleigh Co.*, Bismarck. *Cass Co.*, no locality. *Divide Co.*, 3 mi W Noonan. *Dunn Co.*, T144N-R94W-Sec. 7; T146N-R97W-Sec. 25; 10 mi. N Killdeer. *Enmons Co.*, no locality. *Golden Valley Co.*, Beach. *Grant Co.*, Heart Butte Dam. *Hettinger Co.*, T134N-R37W-Sec. 9. *McKenzie Co.*, T146N-R98W-Sec 16; 2 mi. S Keene. *McLean Co.*, Missouri Riv. S of Garrison. *Morton Co.*, Mandan; Heart Butte. *Ransom Co.*, McLeod. *Richland Co.*, Walcott Dunes; 14 mi. SW Walcott (JTD); 11 mi. W Walcott (JTD); T134N-R52W-Sec. 30 and 31. *Slope Co.*, Burning Coal Vein; Chalky Buttes; Mineral Springs; 3 mi. NE Marmarth (JTD); T136N-R104W-Sec. 2. *Stutsman Co.*, Chase Lake. *Williams Co.*, Williston; Williston Exp. Sta. (EUB).
Collection dates: 1 June - 11 October.
Specimens examined: 314.

Although most abundant on the Missouri Plateau, *E. opacus* is fairly common in the sandhills region of the Sheyenne River Delta in Ransom and Richland counties (Red River Valley). There are no records from the Drift Prairie. This is the latest emerging of the five common species, appearing about the first of June, over four weeks later than the others. Specimens are seldom encountered in abundance. The largest series I have examined are from pit trap collections in McKenzie and Dunn counties (24 and 15 specimens respectively).

***Eleodes suturalis* (Say).**

Records: *Cass Co.*, Fargo, 25 May 1940. *Richland Co.*, Walcott Dunes, 31 July 1974, 23 July 1976. Specimens examined: 3

Eleodes suturalis appears to be restricted to the lower Red River Valley, but too few specimens have been collected to make any generalizations. This species is distributed state wide in South Dakota (Kirk and Balsbaugh, 1975), and quite possibly occurs irregularly throughout southern North Dakota, but it is certainly not common.

***Eleodes tricostatus* (Say).**

Ninety-three records from the following localities: *Billings Co.*, T. Roosevelt Nat. Mem. Park. *Burleigh Co.*, Bismarck. *Cass Co.*, Fargo. *Dickey Co.*, 1 mi. W and 4 mi. S Oakes. *Dunn Co.*, T144N-R94W-Sec. 7: Killdeer Mts.; 10 mi. N Killdeer; 3 mi. NW Killdeer (JTD); T146N-R97W-Sec. 25. *Eddy Co.*, no locality. *Golden Valley Co.*, Beach; Sentinel Butte. *Grand Forks Co.*, Arvilla; University (Grand Forks). *Grant Co.*, Heart Butte Dam; 18 mi. NE Carson. *Hettinger Co.*, T134N-R97W-Sec. 9. *Logan Co.*, no locality. *McHenry Co.*, Towner. *McKenzie Co.*, T146N-R98W-Sec. 16; Cannonball Crk., 27 mi. W Grassy Butte; T148N-R98W-Sec. 18. *McLean Co.*, no locality. *Mercer Co.*, 10 mi. E Hazen; Stanton area. *Morton Co.*, Mandan; 3.5 mi. S St. Anthony. *Pembina Co.*, T161N-R56W-Sec. 22. *Ransom Co.*, McLeod; T135N-R53W-Sec. 15; 1 mi. SE McLeod (JTD). *Richland Co.*, Walcott Dunes; 11 mi. W Walcott (JTD); Mirror Pool. *Slope Co.*, Burning Coal Vein; T136N-R104W-Sec. 2. *Stutsman Co.*, Chase Lake. *Walsh Co.*, S Branch, Park Riv. NE of Adams. *Ward Co.*, North Central Exp Sta. (EUB). *Wells Co.*, no locality. *Williams Co.*, Williston Exp. Sta. (EUB).

Collection dates: 21 April - 21 September

Specimens examined: 255

Recorded from six counties in the Red River Valley and five in the Drift Prairie, as well as from throughout the Missouri Plateau, this is the most widely distributed species of *Eleodes* in North Dakota. It is rarely encountered in large numbers in the state, 79 of the above records are represented by three or fewer specimens. It is most abundant in the sandhills of the Sheyenne River Delta.

Key To Species

1. Elytra rounded laterally (in cross section) 2
- 1' Elytra carinate laterally, or, in doubtful specimens (*E. tricostata*), with elytra costate, the odd costae better developed than the even 5
2. Elytra evidently (macroscopically) sulcate; elytral epipleura with or without tubercules 3
- 2' Elytra punctate, but without distinctly impressed stria, appearing smooth macroscopically; elytral epipleura generally smooth, not tuberculate 4

3. Profemora with ventral subapical tooth on anterior margin; elytral epipleura not tuberculate; anterior pronotal angles dentiform; length greater than 15 mm *E. hispilabris* (Say)
- 3' Profemora not toothed; elytral epipleura tuberculate; anterior pronotal angles not dentiform; length generally less than 15 mm in North Dakota specimens *E. obsoletus* (Say)
4. Pronotum, in dorsal view, distinctly narrowed, usually constricted, basally; length 17 mm. or greater (only one North Dakota record) *E. nigrinus* Lec.
- 4' Pronotum, in dorsal view, subparallel or gradually narrowed behind, never constricted; length less than 15 mm (common in western North Dakota) *E. extricatus* (Say)
5. Lateral margins of pronotum broadly explanate; elytra appear flattened and often have reddish stripe along suture; length greater than 20 mm *E. suturalis* (Say)
- 5' Lateral margins of pronotum not explanate; elytra without red sutural stripes; length less than 20 mm 6
6. Elytra evidently costate, the costae tuberculate; length generally greater than 12 mm *E. tricostatus* (Say)
- 6' Elytra nearly smooth, not tuberculate-costate; length generally less than 12 mm *E. opacus* (Say)

ACKNOWLEDGMENTS

I wish to thank E.U. Balsbaugh, Jr., (NDSU) and P.B. Kanno (UND) for allowing me to examine specimens under their care. C.A. Triplehorn, D.B. Thomas and C.A. Busack offered valuable comments concerning the preparation of this manuscript.

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